

BEST AVAILABLE COPY**IN THE CLAIMS:**

- 1 1. (Previously presented) An electronically tuned circuit comprising a power amplifier
2 coupled to an electronically tunable output network, the power amplifier capable of
3 being operated in a large-signal mode, said output network including an electronically
4 tunable reactive component, wherein electronic tuning of said electronically tunable
5 reactive component includes non-motor operated electronic tuning when said power
6 amplifier is operated in said large-signal mode, further wherein a control line extends
7 to said electronically tunable reactive component for electronically varying reactance
8 of said reactive component over more than two voltage decades.
- 1 2. (Previously presented) An electronically tuned circuit in claim 1, wherein said
2 output network is adapted to be tuned to a selected frequency.
- 1 3. (Previously presented) An electronically tuned circuit in claim 1, wherein said
2 output network is adapted to be adjusted to maintain a match with a varying load
3 impedance.
- 1 4. (Previously presented) An electronically tuned circuit in claim 1, wherein said
2 output network is adapted to modulate the signal at the network output.
- 1 5. (Previously presented) An electronically tuned circuit in claim 4, wherein said
2 output network is further adapted to provide a power amplifier load-impedance locus
3 that substantially maximizes power-amplifier efficiency.
- 1 6. (Previously presented) An electronically tuned circuit in claim 4, wherein said
2 output network is further adapted to follow a substantially resistive power-amplifier
3 impedance locus, thereby maintaining power-amplifier efficiency near maximum.

- 1 7. (Previously presented) An electronically tuned circuit as in claim 1, wherein said
2 output network is adapted to be tuned in accordance with a predetermined set of
3 tuning inputs.
- 1 8. (Previously presented) An electronically tuned circuit as in claim 7, wherein said
2 tuning inputs are selected in accordance with a lookup table.
- 1 9. (Previously presented) An electronically tuned circuit as in claim 1, wherein said
2 output network is adapted to be tuned in accordance with a predetermined lookup
3 table of tuning inputs.
- 1 10. (withdrawn) An electronically tuned circuit as in claim 1, wherein said output
2 network is adapted to be tuned in accordance with a table of the amplifier output.
- 1 11. (Withdrawn) An electronically tuned circuit as in claim 1, wherein said output
2 network is adapted to be tuned in accordance with a table of the network output.
- 1 12. (Withdrawn) An electronically tuned circuit as in claim 1, wherein said output
2 network is adapted to be tuned in accordance with a table of a radiated signal.
- 1 13. (Previously presented) An electronically tuned circuit as in claim 1, wherein said
2 electronically tunable reactive component includes an electronically tunable
3 capacitor.
- 1 14. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a transformer.
- 1 15. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a diode.

- 1 16. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a diode having a control terminal.
- 1 17. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a microelectromechanical system device.
- 1 18. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a variable dielectric material.
- 1 19. (Previously presented) An electronically tuned circuit as in claim 13, wherein said
2 electronically tunable capacitor includes a piezoelectric device.
- 1 20. (Withdrawn) An electronically tuned circuit radiating energy power amplifier as in
2 claim 1, wherein said at least two reactive components include at least one inductive
3 component adapted to be electronically tuned in electrical characteristic.
- 1 21. (Withdrawn) An electronically tuned circuit as in claim 20, wherein said at least one
2 inductive component includes a variable-permeability core.
- 1 22. (Withdrawn) An electronically tuned circuit as in claim 20, wherein said at least one
2 inductive component includes a piezo-electric device.
- 1 23. (Withdrawn) An electronically tuned circuit as in claim 1, wherein said at least two
2 reactive components include at least one transmission line adapted to be
3 electronically tuned in electrical characteristic.
- 1 24. (Withdrawn) An electronically tuned circuit as in claim 23, wherein said at least one
2 transmission-line component includes an electronically variable dielectric material.

- 1 25. (Withdrawn) An electronically tuned circuit as in claim 1, wherein said at least one
2 transmission-line component includes an electrically tunable magnetic material.
- 1 26. (Withdrawn) An electronically tuned circuit as in claim 1, further comprising a
2 passive filter coupled to said output network for removing undesired harmonic
3 frequencies.
- 1 27. (Withdrawn) An electronically tuned circuit as in claim 1, further comprising a
2 second electronically tuned filter coupled to the input of said amplifier for
3 tuning the amplifier input.
- 1 28. (Previously presented) An electronically tuned circuit as in claim 1, further
2 comprising a controller, said controller for providing a control signal for controlling said
3 electronically tunable output network.
- 1 29. (Previously presented) An electronically tuned circuit as in claim 28, further
2 comprising an envelope detector with an envelope detector input and
3 envelope-detector output, said envelope-detector output coupled to the input of said
4 controller, said envelope detector being responsive to an input RF signal and
5 providing a modulation input to said controller.
- 1 30. (Previously presented) An electronically tuned circuit as in claim 28, further
2 comprising a drive-level adjustor coupled for controlling the amplitude of a signal
3 provided to said power amplifier.

1 31. (Previously presented) An electronically tuned circuit as in claim 1, further
2 comprising a digital signal processor coupled to said power amplifier and to said
3 electronically tunable output network, said processor providing a drive signal to
4 said power amplifier and a tuning signal to said electronically tunable output
5 network.

1 32. (Previously presented) An electronically tuned circuit as in claim 31, further
2 comprising a controller coupled to said digital signal processor and to said
3 electronically tunable output network, wherein output of said digital signal processor
4 is directed to said controller and wherein output of said controller is directed to said
5 electronically tunable output network.

1 33. (Previously presented) An electronically tuned circuit as in claim 1, further
2 comprising a drive-level adjuster coupled for adjusting amplitude of a signal
3 provided to said power amplifier.

1 34. (Previously presented) An electronically tuned circuit as in claim 33, wherein said
2 electronically tunable output network and said drive level adjuster are adapted to
3 produce a modulated signal.

1 35. (Previously presented) An electronically tuned circuit as in claim 34, wherein said
2 circuit is for providing a desired circuit output when said desired circuit
3 output is above a threshold said electronically tunable output network is used to
4 control amplitude and when said desired circuit output is below a threshold said
5 drive level adjuster is used to control amplitude.

1 36. (Previously presented) An electronically tuned circuit as in claim 33, further
2 comprising a controller for converting a modulated output into tuning signals for
3 control of said electronically tuned network.

1 37. (Previously presented) An electronically tuned circuit in claim 1, further
2 comprising a bias input for setting bias level of said amplifier.

1 38. (Previously presented) An electronically tuned circuit in claim 37, wherein said
2 bias level is adapted to the minimum level necessary for reliable operation of the
3 power amplifier, thereby reducing power consumption.

1 39. (Previously presented) An electronically tuned circuit in claim 37, further
2 comprising a controller for adjusting said bias level in response to frequency,
3 impedance, and modulation inputs.

1 40. (Previously presented) An electronically tuned circuit comprising:
2 (a) means for power amplifying, where means for power amplifying
3 comprises a large-signal mode; and
4 (b) means for electronic tuning of said means for power amplifying when
5 said means for power amplifying is operating in said large signal
6 mode, wherein said means for electronic tuning is coupled to said
7 means for power amplifying, where means for electronic tuning
8 comprises an electronically tunable reactive component, wherein said
9 electronically tunable reactive component includes non-motor operated
10 electronic tuning, further wherein said line extends to said
11 electronically tunable reactive component for electronically varying
12 reactance of said reactive component more than two values.
13

1 41. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and electronic-tuning means is
3 capable of being tuned to provide a reactance for minimum class-E operation for a
4 selected frequency.

1 42. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and electronic-tuning means is
3 capable of being tuned to provide a reactance for minimum class-E operation while
4 delivering power to a selected load impedance.

1 43. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and electronic-tuning means is
3 capable of being tuned to provide a reactance for minimum class-E operation while
4 simultaneously modulating the output of said electronic-tuning means.

1 44. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and comprises a fixed
3 reactance for optimum class-E operation at a first frequency, wherein said
4 electronic-tuning means is capable of being tuned to provide said power amplifying
5 means with a load impedance for optimum class-E operation for a selected second
6 frequency.

1 45. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and comprises a fixed
3 reactance for optimum class-E operation with a first load impedance, wherein said
4 electronic-tuning means is capable of being tuned to provide said power amplifying
5 means with a load impedance for optimum class-E operation with a second load
6 impedance different from said first circuit load impedance.

1 46. (Previously presented) An electronically tuned circuit as in claim 40, wherein said
2 means for power amplifying operates in class E and said electronic-tuning means is
3 capable of being tuned to provide an impedance for optimum class-E operation
4 when the circuit is delivering a maximum output signal amplitude, and said
5 electronic-tuning means is capable of being tuned to provide suboptimum class E
6 operation when the circuit is delivering less than said maximum output signal
7 amplitude.

1 47. (Withdrawn) An electronically tuned circuit as in [REDACTED] comprising a plurality of
2 amplifier subsystems coupled to a power combine [REDACTED] every of signals from said
3 amplifier subsystems to a common load, wherein [REDACTED] amplifier subsystem
4 comprising comprises a power amplifier coupled [REDACTED] electronically tunable output
5 network, said power amplifier capable of being o [REDACTED] in a large-signal mode, said
6 output network including an electronically tunabl [REDACTED] e component, wherein
7 electronic tuning of said electronically tunable re [REDACTED] component includes non-
8 motor operated electronic tuning when said pow [REDACTED] tier is operated in said large-
9 signal mode, further wherein a control line exten [REDACTED] d electronically tunable
10 reactive component for electronically varying re [REDACTED] of said reactive component
11 over more than two values.

1 48. (withdrawn) An electronically tuned power amp [REDACTED] stem as in claim 47, wherein
2 said output networks are adapted to be tuned to [REDACTED] frequencies.

1 49. (Withdrawn) An electronically tuned power amp [REDACTED] system as in claim 47, wherein
2 said output networks are adapted to be tuned to [REDACTED] desired load impedances.

1 50. (Withdrawn) An electronically tuned power amp [REDACTED] system as in claim 47, wherein
2 said output networks are adapted to modulate [REDACTED] ls from said power amplifiers.

1 51. (Withdrawn) An electronically tuned power a [REDACTED] system as in claim 47, wherein
2 said output networks are adapted to cancel rea [REDACTED] resulting from combining said
3 signals.

1 52. (Withdrawn) An electronically tuned power a [REDACTED] system as in claim 47, further
2 comprising a controller for generating drive a [REDACTED] ol signals for each subsystem.

1 53. (Withdrawn) An electronically tuned power amplifier system as in claim 52, wherein
2 said controller is adapted to generating drive signals of different phases for
3 production of an amplitude-modulated system output.

1 54. (Withdrawn) An electronically tuned power amplifier system as in claim 52, wherein
2 said output networks are adapted to cancel time varying reactances resulting from
3 combining out-of-phase signals.

1 55. (Withdrawn) An electronically tuned power amplifier system in claim 47, further
2 comprising a passive filter coupled to said power amplifier for removing undesired
3 harmonic frequencies and distortion products.

1 56. (Previously presented) An electronically tuned circuit comprising one or more
2 power amplifiers, wherein said power amplifiers are capable of operating in a large-
3 signal mode, further wherein said one or more power amplifiers has an output
4 network, said output network including a tuning inductor, and an
5 electronically tunable reactive component, wherein said electronic tuning of said
6 electronically tunable reactive component includes a motor operated electronic
7 tuning when said one or more power amplifiers are operating in said large-signal
8 mode, further wherein a control line extends to said electronically tunable reactive
9 component for electronically varying reactance of said reactive component over more
10 than two values.

1 57. (Previously presented) An electronically tuned circuit as in claim 56, wherein said
2 output network is adapted to be tuned to a fixed resonant frequency.

1 58. (Previously presented) An electronically tuned circuit as in claim 56, wherein said
2 output network is adapted to be adjusted to maintain a match with a varying load
3 impedance at said network output.

1 59. (Previously presented) An electronically tuned circuit as in claim 56, wherein said
2 output network is adapted to modulate the signal at said network output.

1 60. (Previously presented) An electronically tuned circuit as in claim 1, wherein said
2 output network includes at least two reactive components connected as a tuned
3 circuit, wherein at least one of said reactive components is adapted to being
4 electronically tuned by a tuning signal.

1 61. (Previously presented) An electronically tuned circuit as in claim 28, wherein said
2 controller converts an input signal to a voltage for controlling said tunable
3 output.

1 62. (Previously presented) An electronically tuned component in claim 1, wherein said
2 electronically tunable reactive component is continuously variable.

1 63. (Previously presented) An electronically tuned component in claim 40, wherein said
2 electronically tunable reactive component is continuously variable.

1 64. (Previously presented) An electronically tuned component in claim 56, wherein said
2 electronically tunable reactive component is continuously variable.

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